UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,397	07/09/2001	Min-Goo Kim	678-707 (P9827)	6457

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EXAMINER
BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *17-21* is/are allowed.

6)☒ Claim(s) *1-12 and 14* is/are rejected.

7)☒ Claim(s) *13,15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>07 September 2001</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____ .

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6)☐ Other: .

DETAILED ACTION

Drawings

1.   Figures 1-3 should be designated by a legend such as --Prior Art-- because only

that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction

or corrected drawings are required in reply to the Office action to avoid abandonment of

the application. The objection to the drawings will not be held in abeyance.

Specification

2.   The disclosure is objected to because of the following informalities:

On page 8: in line 5, "detects" apparently should be "selects" or "determines"

(see *e.g.* p. 20, lines 1, 5, 6 and 9); in line 7, "detected" apparently should be

"determined" or "selected"; in line 26, "in" presumably should be "with".

On page 9: in Table 2, "M=1" apparently should be "m=1", "do while mL"

apparently should be "do while m$\leq$L" (see *e.g.* p. 15, lines 15-16 and 24).

On page 10: in line 3, "until m=L" apparently should be "while m$\leq$L"; in lines 9 and

27, "M" apparently should be "m".

On page 11: in line 3, "M" apparently should be "m".

On page 16: in line 9, "detected" apparently should be "determined" or "selected".

Appropriate correction is required.

Claim Objections

3.   Claim 12 is objected to because of the following informalities:

In line 18, "the steps" apparently should be deleted or replaced by "processing

the steps".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4.   Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

In claim 1: in line 5, "detecting" apparently should be "determining" or "selecting";

in line 7 (first occurrence) and in line 8, "detected" apparently should be "determined" or

"selected"; in lines 7-9, "inserting the detected symbol" apparently should be "inserting a

repetition of the determined symbol" or "inserting a repetition of the selected symbol"; in

line 9, "by repetition" apparently should be deleted.

In claim 5: in line 7, "detecting" apparently should be "determining" or "selecting";

in line 9 (first occurrence) and in line 10, "detected" apparently should be "determined"

or "selected"; in lines 9-11, "inserting the detected symbol" apparently should be

"inserting a repetition of the determined symbol" or "inserting a repetition of the selected

symbol"; in lines 10-11, "by repetition" apparently should be deleted.

In claim 9: in lines 10-12, "determining symbols at every period starting from the

symbols at the position corresponding to the offset value to be non-repeated symbols,

the period being determined according to a code rate of the turbo encoder" is prolix,

redundant and confusing and apparently should be "starting from the symbols at the

position corresponding to the offset value:"; in line 13, "detecting" apparently should be

"determining" or "selecting"; in line 15 (first occurrence) and in line 16, "detected"

apparently should be "determined" or "selected"; in line 15, "inserting the detected

symbol" apparently should be "inserting a repetition of the determined symbol" or

"inserting a repetition of the selected symbol"; in line 17, "by repetition" apparently

should be deleted.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 1-3, 5-7, 12 and 14 are rejected under 35 U.S.C. 102(e) as being

anticipated by U.S. Patent No. 6,501,748 to Belaïche (hereafter Belaïche).

Regarding claims 1, 2, 5 and 6, Belaïche shows a rate-matching algorithm (col.

5, lines 1+) for uplink and downlink cellular communications, disclosed in an ETSI

technical document SMG2/UMTS-L1/Tdoc428/98, for determining the positions of

"substantially equidistant (N-L) symbols among ... L code symbols", and repeating the

symbols so determined. The "L code symbols" are generated by a channel code

encoder (110) as a tailed convolutional code (col. 3, line 30).

Regarding claims 3 and 7, a tailed convolutional code is also a linear block code.

Further regarding claim 5, the rate-matching algorithm described by Belaïche can

be used for "Flexible Data Rate Transmission" (col. 4, lines 60+), thereby embodying an

"FDRT ... block".

Regarding claims 12 and 14, the rate-matching algorithm described by Belaïche

has an "error accumulation value" (e) compared to a "predetermined threshold" of 0 (*i.e.*

test for integer e > 0). The rate-matching algorithm described by Belaïche features a

step of, when "the error accumulation value is less than the threshold, "resetting (sic) a

new error accumulation value ... by adding the error accumulation value to a

predetermined increment" ($e = e + 2*N_{pr}$), as well as "setting a new error accumulation"

($e = e + (2*N_{pr} - 2*X_i)$) by, when "error accumulation value" exceeds the "predetermined

threshold" (e > 0), subtracting a "predetermined decrement" as ($2*N_{pr} - 2*X_i$) is a

negative value. It is here noted that "3" in the rate-matching algorithm described by

Belaïche apparently is a typo and should be "e".

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Belaïche in view of U.S. Patent No. 6,215,814 to Ylitalo *et al* (hereafter Ylitalo).

Although Belaïche mentions application of the algorithm in an IMT2000 system,

Belaïche does not mention applying the algorithm to the result of a "turbo encoding".

The term "turbo encoding" is here understood to refer to a parallel concatenation of

recursive systematic convolutional codes.

Ylitalo discloses (col. 5, line 2) using a turbo code as the channel code in an

IMT2000 system as conventional.

It would have been obvious to a person having ordinary skill in the art at the time

the invention was made to implement Belaïche's IMT2000 channel code encoder as a

turbo code encoder. Such an implementation would have been obvious because Ylitalo

discloses that using a turbo code as the channel code in an IMT2000 system was

already conventional.

Allowable Subject Matter

9.   Claims 9-11 would be allowable if rewritten or amended to overcome the

rejection under 35 U.S.C. 112, second paragraph, set forth in this Office action.

10.   Claims 13, 15 and 16 are objected to as being dependent upon a rejected base

claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.
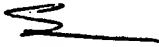
11.   Claims 17-20 are allowed.

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (703) 305-9681. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

Stephen M. Baker
Primary Examiner
Art Unit 2133

smb